



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

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REGIONAL  
ADMINISTRATOR'S  
DIVISION

December 12, 2022

Ms. Emma Rawnsley  
NOAA Manchester Research Station EA  
C/O - AECOM Technical Services  
888 SW 5th Avenue, Suite 600  
Portland, Oregon 97204

Dear Ms. Rawnsley:

The U.S. Environmental Protection Agency has reviewed the National Oceanic and Atmospheric Administration's November 18, 2022, Draft Environmental Assessment for the Manchester Research Station Seawater System Replacement and Campus Addition Project (EPA Project Number 22-0064-NOAA). EPA has conducted its review pursuant to the National Environmental Policy Act and our review authority under Section 309 of the Clean Air Act. The CAA Section 309 role is unique to EPA and requires EPA to review and comment publicly on any proposed federal action subject to NEPA's environmental impact statement requirement.

The DEA analyzes potential environmental impacts from the proposed project at the National Marine Fisheries Service Northwest Fisheries Science Center Manchester Research Station in Manchester, Washington. The proposed project would include the replacement of the seawater treatment and distribution system, and construction of a new research laboratory, office buildings, and associated site improvements (Campus Addition). The DEA analyzes a Preferred Alternative (Seawater System and Campus Addition), an Action Alternative 1 (Seawater System Only), and the No Action Alternative.

EPA's review identified potentially significant environmental concerns and deficiencies in the analysis that should be addressed in the NEPA document. Included in EPA's detailed comments and recommendations (attached) are: recommendations for additional evaluation and characterization of the contaminants at the project site to minimize exposure risks to human health and the environment; construction stormwater considerations related to the EPA NPDES program for wastewater discharges that will be required for the federal aquaculture research facility; recommendations for evaluating greenhouse gas emissions; considerations for climate change resilience through green infrastructure and sustainable siting of federal buildings and facilities; environmental justice considerations; and mitigation measures and best management practices to reduce potential significant environmental impacts.

Thank you for the opportunity to review the DEA for this project. If you have questions about this review, please contact Mark Jen of my staff at (907) 271-3411 and [jen.mark@epa.gov](mailto:jen.mark@epa.gov) or contact me, at (206) 553-1774 or at [chu.rebecca@epa.gov](mailto:chu.rebecca@epa.gov).

Sincerely,

Rebecca Chu, Chief  
Policy and Environmental Review Branch

Enclosure

**U.S. Environmental Protection Agency**  
**Detailed Comments on the Draft Environmental Assessment for the**  
**Manchester Research Station Seawater System Replacement and Campus Addition Project**  
**Manchester, Washington**  
**December 2022**

**CERCLA - Superfund Site**

The Marine Research Station includes approximately 22-acres of Department of Commerce/NOAA (“NOAA”) property within the southern part of the Manchester Annex and is located along the shoreline of Clam Bay/Puget Sound in unincorporated Kitsap County, near Manchester, Washington.

EPA is a federal holding agency for the Manchester Annex and maintains an environmental laboratory northeast of the MRS. The Department of Defense is the lead agency for the Manchester Superfund Site (also known as Old Navy Dump/Manchester Laboratory) (CERCLIS ID Number WA 8680030931), which has been on the National Priorities List since 1994, pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act.<sup>1</sup>

The site was previously owned by the U.S. Army and subsequently transferred to the U.S. Navy, which used the area for construction, repair, maintenance, and storage of submarine nets and boats, as well as for firefighting training and a landfill. These past activities and land uses have resulted in soils and sediments contaminated with dioxins and furans, polychlorinated biphenyls, metals, vinyl chloride, and asbestos.<sup>2</sup> Former remnant buried asbestos-clad pipelines associated with underground storage tanks were either removed and/or abandoned in place, but could still be present in the project area.<sup>3</sup> More recently, per- and polyfluoroalkyl substances (PFAS) has been identified in the groundwater.<sup>4</sup>

In 1997, a cleanup plan was issued to address contamination at the former firefighting training and landfill areas, and Clam Bay, which included removing contaminated soil and structures in the former fire fighter training area; constructing a landfill cap and shoreline embankment protection system; placing clean sediment in the nearshore area to enhance natural recovery of the sediments; and issuing a temporary ban on subsistence-level shellfish harvesting. The plan also included long-term monitoring of the seeps, sediment and shellfish. In 2004, a formal review concluded that the landfill cap, shoreline protection system, and remedial activities have achieved the intended goal of reducing risks to human health and the environment. Supplemental contaminant sampling and long-term monitoring at the site are required and ongoing, including formal reviews every five years.

Contamination Sources and Contaminants

EPA recommends the NEPA document evaluate both the context and intensity of the direct, indirect, and cumulative impacts of the proposed project to human health and the environment that includes existing contamination. While remedial investigations and studies have identified and characterized certain areas of known contamination, the full extent of the project area has not been characterized and evaluated for additional contamination sources and contaminants (e.g., dioxins, furans, heavy metals, PCBs, PFAS, etc.). The presence of PFAS has only been recently identified and its full extent within the CERCLA site boundaries is unknown. PFAS is an emerging contaminant and migrates quickly through groundwater. A February 2022 Site Inspection Report<sup>5</sup> indicated that PFAS was detected in groundwater

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<sup>1</sup> EPA Superfund Site: Old Navy Dump/Manchester Laboratory (USEPA/NOAA), Manchester, WA. Accessible at: <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=1001134#bkground>. Accessed on 12/8/2022.

<sup>2</sup> DEA; page 4-119.

<sup>3</sup> DEA; page 4-122.

<sup>4</sup> DEA (Figure 4.17-2); page 4-116.

<sup>5</sup> U.S. Army Corps of Engineers – Kansas City District (February 2022). Draft Final Site Inspection Report, Manchester Annex. Per- and Polyfluoroalkyl Substances, Old Navy Dump/Manchester Annex Site, Manchester, Washington, Section 5.0 Summary and Conclusions, page 17.

below applicable screening levels<sup>6</sup> at both the Northern Simulator Complex and the other Firefighter Training Infrastructure. In the Main Simulator Complex, PFAS was detected in groundwater at concentrations that exceed applicable screening values. A critical point to note is that the applicable screening levels have been updated as of July 2022.<sup>7</sup>

Additionally, PFAS disposal methods and options are limited. Improper handling and disposal could spread PFAS to non-PFAS contaminated areas. EPA recommends consideration of the *Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances*<sup>8</sup> to address future PFAS disposal activities. Project excavation, improper handling of PFAS contaminated soils, and incomplete characterization of the site may result in impacts to human health and the environment and substantially complicate future remedial investigations, designs, and activities.

### Seawater Discharge Outfall

The DEA indicates that the location of the proposed combined single seawater outfall is in close proximity to the shoreline embankment where substantially high levels of PCBs were identified during a recent sampling event.<sup>9</sup> The increased volume and velocity of the wastewater effluent outfall discharges may contribute to increased erosion of the shoreline embankment and intertidal bed of Clam Bay, and result in an additional source vector of PCBs to Clam Bay.

EPA recommends the NEPA document include additional modelling, calculations, and engineering analysis to evaluate the potential outfall erosional impacts from increased outfall flow volumes and velocities to prevent additional erosion of the adjacent embankment and intertidal bed of Clam Bay. Supplemental sampling of the shoreline embankment is planned in January 2023 to better determine the extent of the embankment PCB contamination. EPA recommends that the results from the supplemental embankment sampling be included in the NEPA document.

### Biological Assessment

The DEA identifies and discusses marine mammals in the Puget Sound area, which migrate through marine waters adjacent to the MRS. Endangered Species Act listed marine mammals include the “endangered” southern resident killer “Orca” whales and two distinct populations of humpback whales (Central America Segment – “endangered” and Mexico Segment – “threatened”). These marine mammal species are also listed as “endangered” by the State of Washington. A number of other marine mammal species in the area are protected under the Marine Mammal Protection Act. Designated critical habitat for the southern resident killer “Orca” whales include marine waters immediately adjacent to the MRS.<sup>10</sup>

In addition, ESA listed marine fish species within the vicinity of Clam Bay/Puget Sound include the “threatened” Chinook salmon, steelhead trout, and yellow rockfish and the “endangered” Puget Sound/Georgia Basin Distinct Population Segments of bocaccio. ESA “critical habitat” for bocaccio and Chinook salmon has been designated in the marine waters immediately adjacent to the MRS.<sup>11</sup>

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<sup>6</sup> Office of the Assistant Secretary of Defense. Memorandum, September 2021: “Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program.”

<sup>7</sup> Office of the Assistant Secretary of Defense. Memorandum, July 2022: “Investigating Per- and Polyfluoroalkyl Substances within the Department of Defense Cleanup Program.”

<sup>8</sup> EPA *Interim Guidance on the Destruction and Disposal of Perfluoroalkyl and Polyfluoroalkyl Substances and Materials Containing Perfluoroalkyl and Polyfluoroalkyl Substances* (December 18, 2020). Accessible at: [https://www.epa.gov/system/files/documents/2021-11/epa-hq-olem-2020-0527-0002\\_content.pdf](https://www.epa.gov/system/files/documents/2021-11/epa-hq-olem-2020-0527-0002_content.pdf). Accessed on 12/8/2022.

<sup>9</sup> U.S. Army Corps of Engineers (June 16, 2022). Draft Final Quality Assurance Project Plan for Soil Sampling, Old Navy Dump/Manchester Annex, Manchester, Washington, FUDS Property F10WA011902, Kansas City and Seattle Districts.

<sup>10</sup> DEA; page 4-62.

<sup>11</sup> DEA; page 4-61.

EPA recommends the NEPA document include a Biological Assessment to evaluate the potential adverse impacts to Puget Sound marine mammals and fish species protected under ESA, and to their designated critical habitats. Identify conservation measures to ensure that ESA listed marine mammals, fish species, and their designated critical habitat have the necessary protections in place to mitigate for these impacts. In particular, the recent identification of PFAS and its potential to quickly migrate through groundwater requires further attention. The fate, persistence, bioavailability, and bioaccumulation of PFAS in the marine ecosystem are not known, and need to be fully characterized and evaluated in the BA.

### Plan Development

As previously noted, the DEA does not fully evaluate and characterize the potential contamination sources and contaminants within the project area at the Manchester Annex Superfund Site. Best management practices based on strategically developed plans will reduce the significance of project impacts. EPA recommends the DEA include commitments to develop and implement a comprehensive and focused Sampling and Analysis Plan (SAP) and Soil Management Plan (SMP) to ensure applicable sampling, characterization, storage/stockpiling, and disposal of contaminated soils and other waste materials associated with construction of the seawater treatment and distribution system and campus additions. The proposed work will require attentive considerations and processes to minimize the risk of transferring contamination outside of the CERCLA site boundaries and exposure to human health and the environment. The SAP must ensure accurate and thorough soil and groundwater characterization of contamination sources prior to any excavation activities.

EPA recommends that NOAA consult and coordinate with the EPA Region 10 Remedial Project Manager, Patrick Hickey at (206) 553-6295 or [hickey.patrick@epa.gov](mailto:hickey.patrick@epa.gov) and the U.S. Army Corps of Engineers Project Manager, Ember Korver at (206) 764-3479 or [ember.e.korver@usace.army.mil](mailto:ember.e.korver@usace.army.mil), in developing the SAP and SMP associated with the proposed project to ensure that appropriate steps are taken to protect the remedy and comply with existing institutional and land use controls defined in the CERCLA Record of Decision<sup>12</sup> for the Manchester Annex Superfund Site (Old Navy Dump/Manchester Laboratory).

### **Hazardous Materials**

Excavation, trenching, construction, and other ground-disturbing activities for the new seawater treatment and buried pipeline distribution system (Phase 1), and campus addition (Phase 2) may result in unearthing, exposing, and/or releasing potential contaminants of concern from soils and/or groundwater on site. As previously mentioned, EPA is concerned that the proposed project may include activities which affect the remedy and/or deviate from the institutional controls and land use restrictions detailed in the CERCLA ROD to prevent releasing contamination. Once released, contaminants have the potential to migrate and distribute to adjacent off-site areas, such the Manchester State Park recreational areas, baseball fields, farmlands, etc. In the event the proposed project resulted in a release of contaminants from the CERCLA site in concentrations which exceed thresholds and pose risk to human health and the aquatic environment, future regulatory action could be required.

To evaluate, identify and appropriate minimize the risk of releasing hazardous waste and contaminants from the CERCLA site, EPA recommends the NEPA analysis include following:

- Description of how NOAA will conduct additional surveys, studies, and analysis to identify and delineate areas of potential contaminants of concern, hazardous and waste materials, and toxic substances, such as asbestos, lead-based paint, PCBs, dioxins, PFAS, etc. in soils and

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<sup>12</sup> Record of Decision, Manchester Annex Superfund Site (September 1997). Prepared for the U.S. Army Corps of Engineers, Seattle, District under Contract No. DACA67-93-D-1004, Delivery Order No. 26. Accessible at: <https://semspub.epa.gov/work/10/1063374.pdf>. Accessed on 12/8/2022.

groundwater not previously known or identified within the project area. Disclose information regarding these materials in the environmental document;

- Describe mitigation measures and best management practices that will be used to abate and/or minimize the potential release and exposure of potential contaminants of concern, hazardous and waste materials, and toxic substances during construction, excavation, trenching and other ground-disturbing activities;
- Describe how hazardous and waste materials, and toxic substances generated during construction activities will be stored, handled, and disposed in accordance with local, state and federal requirements; and
- Assurances that all hazardous materials and toxic substances that are excavated, handled, stockpiled, stored, generated, and/or disposed on-site and/or off-site comply with state, local, and federal requirements, such as the Resources Conservation, and Recovery Act.

EPA recommends coordinating with the Remedial Project Manager for the CERLCA Site to minimize accidental release of contaminants from the site or impacting the remedy or ROD requirements of the cleanup within the project footprint.

### **NPDES Wastewater Discharges**

Pursuant to the Clean Water Act § 402 and 40 CFR Part 122, EPA administers the National Pollutant Discharge Eliminations System program for wastewater discharges associated with industrial activities. Although the State of Washington has been delegated permitting authority, EPA is the NPDES permitting agency for federal facilities/operators, such as the MRS.

#### Construction Stormwater Discharges

Both the Preferred Alternative and Action Alternative 1 would result in land disturbance activities, such as clearing, grading, and excavating/trenching which would disturb one or more acres of land and result in discharges of construction stormwater to Waters of the United States and likely require coverage under the EPA NPDES Construction General Permit (CGP) for stormwater discharges.<sup>13</sup> For technical questions regarding the NPDES CGP, contact Margaret McCauley at (206) 553-1772 or [mccauley.margaret@epa.gov](mailto:mccauley.margaret@epa.gov).

To best align the regulatory processes of the Clean Water Act with the NEPA analysis, EPA recommends the NEPA document identify mitigation measures to ensure protection of water quality. For example, key requirements of the CGP include the development and implementation of a Stormwater Pollution Prevention Plan; erosion and sediment controls and pollution prevention practices; monitoring and inspections by qualified personnel to verify permit compliance; routine maintenance and taking corrective action to fix problems with controls or discharges; documentation of site inspections, dewatering inspections, and corrective actions; and certain other activities. EPA recommends the NEPA analysis include the CGP requirements as measures to minimize and mitigate potential impacts to the marine environment.

#### Federal Aquaculture Facility Discharges

EPA is reissuing the NPDES General Permit for federal aquaculture facilities and aquaculture facilities located in Indian Country within the boundaries of Washington State (No. WAG130000). EPA has been coordinating with NOAA Fisheries during the NPDES GP reissuance process, and similarly

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<sup>13</sup> EPA NPDES Construction General Permit website. Accessible at: <https://www.epa.gov/npdes-permits/npdes-general-permit-federal-aquaculture-facilities-and-aquaculture-facilities>. Accessed on 12/8/2022.

recommends aligning the NPDES GP with this NEPA analysis as described further in this document. For technical questions regarding the NPDES GP (No. WAG130000), contact Martin Merz at (206) 553-0205 or [merz.martin@epa.gov](mailto:merz.martin@epa.gov).

### Characterization of Discharges

EPA's analysis for the NPDES GP identified certain pollutants of concern in the discharge effluent associated with aquaculture facilities. These pollutants include, five day biochemical oxygen demand (BOD5), total suspended solids (TSS), settleable solids, nutrients, ammonia, chlorine, temperature, dissolved oxygen, aquaculture drugs and chemicals, and PCBs.<sup>14</sup>

The significant sources of pollutants discharged from aquaculture facilities are solids from uneaten feed and feces, which are primarily organic matter with a high BOD5, and nutrients, including organic nitrogen and phosphorus. Residuals of drugs or chemicals used for maintenance or restoration of animal health, and residuals of chemicals used for cleaning equipment or for maintaining or enhancing water quality conditions are additional pollutants associated with aquaculture.

To evaluate the potential environmental impacts on the receiving waters and marine ecosystem of Clam Bay/Puget Sound, EPA recommends the NEPA document characterize the discharge effluent from the MRS. For example, develop facility process flow models for the aquaculture facility/seawater treatment systems and compare the model to the proposed new seawater treatment system. Identify and quantify in the process flow models the marine and freshwater inputs and outputs, additional facility inputs, such as feed, drugs and chemicals, etc. and outputs, such as uneaten feed, feces, organic matter, nutrients, chemicals, etc.

EPA recommends the NEPA document identify mitigation measures to protect water quality and human health. For example, the NPDES GP (No. WAG130000) maintains certain requirements to minimize the discharge of pollutants, such as the development of a Quality Assurance Plan and Best Management Practices Plan addressing solids control, facility maintenance, record keeping, and chemical storage. The effluent limits, disposal requirements, discharge prohibitions, record keeping, and reporting requirements were designed to reduce discharges of oxygen demanding materials, residual feed, and floating, suspended, and submerged matter, including fish mortalities. Identify the requirements of the NPDES GP and include them as measures to minimize and mitigate potential impacts to the marine environment.

The DEA indicates that all seawater outflow is proposed to discharge from one existing outfall, rather than from multiple outfalls, as currently occurs. The existing beach outfalls would be abandoned in-place.<sup>15</sup> EPA recommends capping and/or plugging all abandoned/inactive outfalls.

### **Wetlands and Floodplains**

The DEA identifies several wetland areas along the southwest portion near the site entrance and east of the main access road west of Building 22.<sup>16</sup> In particular, a wetland area was identified as an intermittent or seasonally saturated, depression, palustrine scrub-shrub/emergent wetland, which is hydrologically connected to a ditch. In order to evaluate the direct and indirect impacts to wetland resources, EPA recommends a formal determination be conducted to identify and delineate the wetlands, and evaluate the surface hydrological connections between the wetlands and other surface waters (upstream and

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<sup>14</sup> EPA NPDES Permit Fact Sheet #WAG130000 (September 7, 2022). Federal Aquaculture Facilities and Aquaculture facilities Located in Indian Country within the Boundaries of Washington State. Accessible at: <https://www.epa.gov/system/files/documents/2022-09/R10-NPDES-Washington-Aquaculture-GP-WAG130000-Fact-Sheet-2022.pdf>. Accessed on 12/8/2022.

<sup>15</sup> DEA; page 2-19.

<sup>16</sup> DEA; page 3-1.

downstream), such as the unnamed tributary to Beaver Creek and/or Beaver Creek and the floodplain area.

EPA recommends consideration of additional mitigation measure to minimize sedimentation and turbidity into the wetlands, floodplains, natural drainages, and adjacent downstream waters that discharge into estuarine intertidal areas of Clam Bay, which should be protective of the coastal zone.

### **Air Quality**

The Clean Air Act requires EPA to establish National Ambient Air Quality Standards (40 CFR part 50) for six “criteria” air pollutants for stationary, mobile, marine, and/or land-based sources. These standards establish threshold levels for criteria pollutants, including carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter (2.5 and 10 microns), and sulfur dioxide to be protective of human health and the environment.

EPA recommends the NEPA document provide baseline estimates of the air quality criteria pollutants and their emission sources for the MRS (No Action Alternative) and compare this baseline information with air quality estimates for the Preferred Alternative and Action Alternative 1. In particular, construction activities would result in heavy earthmoving equipment operations, including crane, backhoes, grader, dozer, vibratory or sheepsfoot roller, concrete trucks, concrete pumps, and tree removal equipment. Also evaluate mobile sources, such as light trucks and passenger vehicles, etc. Identify the sources and emissions of the six criteria pollutants and evaluate them in the NEPA document. EPA’s Air Emissions Inventories website can be a useful tool in developing estimates for certain pollutant sources and their emissions.<sup>17</sup>

EPA recommends the NEPA document incorporate the estimated criteria air quality emissions information to support the development of mitigation measures, strategies, plans and/or programs for air quality emissions reductions and to ensure that proposed construction activities at the MRS attain and maintain the NAAQS, as well as state, regional, and local requirements in the Puget Sound area.

### **Fugitive Dust**

Fugitive dust is an air pollutant which can be generated during construction activities from heavy earthmoving and ground disturbance operations for the seawater treatment and distribution system, as well the campus additions, wind-blown material from soil stockpiles and exposed soils, truck and vehicular traffic, etc. Elevated levels of fugitive dust may pose a risk to human health and the environment, particularly for individuals and children with pre-existing respiratory illnesses, such as bronchitis, asthma, etc. In particular, wind generation of dust particles can migrate into nearby surface waters, including wetlands and tributaries, where fish and other organisms, and aquatic communities, and vegetation may be negatively impacted. Beaver Creek supports several species of Pacific Salmon, such as coho and chum salmon, and cutthroat trout.

EPA has concerns regarding potential contaminants in the excavated soils and soil stockpiles being released into the air during construction activities and distributed by wind to adjacent surface waters. EPA recommends the NEPA document include a fugitive dust model/wind pattern analysis to identify potential sources of fugitive dust emissions, and determine the distribution and distances where dust may migrate either on and/or off site, such as the Manchester State Park – campground and trails; South Kitsap Eastern Little League baseball fields; farm and agricultural lands; rural communities and neighborhoods; etc. and evaluate the potential exposure risk to construction workers, MRS staff, children and vulnerable populations, and the aquatic environment.

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<sup>17</sup> EPA Air Emissions Inventory website. Accessible at: <https://www.epa.gov/air-emissions-inventories>. Accessed on 12/8/2022.

EPA recommends the NEPA document include a Fugitive Dust Control Plan, which would include procedures to prevent, reduce, abate, and control dust during construction by implementing BMPs to protect the health of workers, MRS staff, the public and the environment. Identify and include BMPs, such as limiting exposed soil areas, wind barriers and cover tarps, applying dust suppression and vacuum control equipment, control traffic speed through the construction site, limit work on windy days, etc. Include training, work site monitoring, and corrective actions in the plan.

### **Transportation, Access and Parking**

The proposed two phase, two year construction schedule for the project would result in new traffic volumes and patterns, and place additional stress on existing rural roads, which may introduce additional traffic hazards resulting in significant impacts, if not appropriately mitigated. The DEA indicates that roads near the MRS would need to accommodate heavy truck traffic related to delivery of heavy equipment and materials/supplies, and import of fill material and export of excess excavated spoils, and construction worker commute vehicle trips to access the MRS. In particular, parking for construction workers at the MRS will need to be evaluated as the current 45 parking spaces for staff and visitors at the MRS would not accommodate the proposed 50 construction workers. Additional temporary staging areas for spoil stockpiles and storage of construction equipment and materials would need to be considered in the NEPA document.

To address the potential significant impacts associated with construction-related traffic, access, and parking at the MRS, EPA recommends the NEPA document include a Transportation, Access, and Parking Plan with mitigation measures. In particular, the entrance to MRS on Beach Drive East provides access to EPA's Manchester Environmental Laboratory. The two facilities share the main driveway from Beach Drive East through the NOAA property. EPA would appreciate continued communication and coordination between our respective agencies regarding transportation, traffic, and access planning for the two year, two phase construction schedule proposed for this project. Contact Barry Pepich, Director, EPA Manchester Laboratory at (360) 871-8701 or [pepich.barry@epa.gov](mailto:pepich.barry@epa.gov) to discuss transportation and access issues between the two facilities.

### **Environmental Consequences**

The DEA evaluates the environmental consequences of each resource to include the intensity and levels of potential effects associated with the Preferred Alternative and the Action Alternative 1.<sup>18</sup> EPA recommends the NEPA document summarize the environmental consequences of the Preferred Alternative and the Action Alternative 1 in comparative form, such as a table, which depicts the overall magnitude of impact and consideration of duration, geographic extent and potential likelihood to occur.

### **Cumulative Impacts**

When analyzing the project impacts, EPA recommends determining what the cumulative impacts of the proposed project will be on both human health and the environment. For example, include an evaluation of the proposed project's synergistic effects in the context of interacting with, and potentially exacerbating the effects of other projects in proximity (e.g., the timing of the work coinciding with other human or natural disturbances that are affecting the project area). Greenhouse gas (GHG) emissions associated with past, present, and reasonably foreseeable future actions may result in cumulative impacts to climate change and resilience.

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<sup>18</sup> DEA; Page 4-2.

## Greenhouse Gas

Executive Order 13990 on *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*<sup>19</sup> requires the review of federal actions that would further promote and protect public health and the environment, such as reducing GHG and bolstering resilience to the impacts of climate change. Consistent with E.O. 13990, EPA recommends the NEPA document include an evaluation of GHG emission reductions and measures to bolster resiliency of the proposed action to climate change.

### Construction

EPA recommends the NEPA document include estimates of project level GHG emissions (e.g., carbon dioxide, methane, nitrous oxide, and fluorinated gases) for the Preferred Alternative and Action Alternative 1 associated with construction resulting from heavy earthmoving equipment operations. The DEA identifies heavy construction equipment to include a crane, backhoes, grader, dozer, vibratory or sheepsfoot roller, concrete trucks, concrete pumps, tree removal equipment, etc. Include GHG estimates from operations and maintenance activities in the NEPA document.

EPA's *National Emissions Inventory*<sup>20</sup> provides a comprehensive and detailed estimate of air emissions for criteria pollutants and hazardous air pollutants from air emissions sources. This inventory may be a useful resource for this analysis. Report GHG emissions estimates for their global warming potential weighted in CO<sub>2</sub>-equivalent units (CO<sub>2</sub>-e). In addition, EPA's *Greenhouse Gas Equivalencies calculator*<sup>21</sup> may be a useful tool to convert emissions or energy data to the equivalent CO<sub>2</sub>-e emissions for this project.

### Operations

EPA recommends the NEPA document include estimates of the current baseline GHG emissions associated with operations of the MRS, which would represent the No Action Alternative. In addition, include GHG estimates for facility operations associated with the Preferred Alternative or Action Alternative 1. EPA recommends depicting this information into a summary table to compare estimates of GHG emissions associated construction and operations of both action alternatives to the No Action Alternative (baseline).

### Social Costs of GHG

Executive Order 13990 emphasizes the importance for federal agencies to capture the full costs of GHG emissions, including consideration of global damages. The Interagency Working Group (IWG) on the Social Cost of Greenhouse Gases published a Technical Support Document<sup>22</sup> which included interim estimates for the Social Cost of carbon dioxide, methane, and nitrous oxide (referred to collectively as SC-GHG) for agencies to use "when monetizing the value of changes in GHG emissions resulting from regulations and other relevant federal agency actions until final values are published."

EPA recommends the NEPA document evaluate and disclose the monetized climate damages using the relevant SC-GHG for the respective net and gross emissions for carbon dioxide, methane, and nitrous oxide for the Preferred Alternative and Action Alternative 1, including the No Action alternative. Providing estimates of these emissions discloses the different environmental impacts associated with

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<sup>19</sup> Executive Order 13990. *Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis*. Accessible at: <https://www.govinfo.gov/content/pkg/FR-2021-01-25/pdf/2021-01765.pdf>. Accessed on 12/8/2022.

<sup>20</sup> EPA National Emissions Inventory. Accessible at: <https://www.epa.gov/air-emissions-inventories/national-emissions-inventory-nei>. Accessed on 12/8/2022.

<sup>21</sup> EPA Greenhouse Gas Equivalencies Calculator. Accessible at: <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>. Accessed on 12/8/2022.

<sup>22</sup> Interagency Working Group on Social Cost of Greenhouse Gases, United States Government (February 2021). Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990. Accessible at: [https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument\\_SocialCostofCarbonMethaneNitrousOxide.pdf](https://www.whitehouse.gov/wp-content/uploads/2021/02/TechnicalSupportDocument_SocialCostofCarbonMethaneNitrousOxide.pdf). Accessed on 12/8/2022.

emissions for each of the GHGs.<sup>23</sup> This comparative analysis would illustrate the costs and benefits to society associated with each alternative, to inform the public, as well as federal agency decision-making.

### GHG Reductions Goals

EPA recommends the NEPA document consider ongoing and projected regional and local climate change efforts to ensure robust climate resilience/adaptation planning in the project design for construction, operations, and maintenance. Ongoing and projected regional and local climate impacts include, but are not limited to, sea-level rise, flooding, high intensity precipitation events, at-risk areas, increase temperatures and fire risk, etc. Consideration of these impacts would help avoid infrastructure investments in vulnerable areas and facilities, and unintended impacts on local communities. EPA recommends the NEPA document include consideration of relevant state, tribal, or local adaptation plans, if applicable.

## **Climate Change Resiliency and Adaptation**

### Green Infrastructure

Storm water runoff from impervious surfaces, such as parking lots, rooftops, roads and walkways represents a major source of water pollution carrying sediments, oil and grease, toxic substances, heavy metals, and other pollutants into adjacent wetlands, fish-bearing streams, and marine intertidal areas. The DEA estimates the replacement of the seawater treatment and distribution system (Phase 1) would result in net impervious surface area of 9,600 ft<sup>2</sup> (0.22 acres).<sup>24</sup> The campus addition (Phase 2) would include construction of four new research laboratory/office buildings and associated site improvements, which would result in 35,300 ft<sup>2</sup> (0.81 acres) of new impervious surfaces.<sup>25</sup>

In 2019, Congress enacted the Water Infrastructure Improvements Act. The Act defines Green Infrastructure as: *the range of measures that use plant or soil systems, permeable pavement or other permeable surfaces or substrates, stormwater harvest and reuse, or landscaping to store, infiltrate, or evapotranspire stormwater and reduce flows to sewer systems or to surface waters.*

EPA recommends the NEPA document evaluate green infrastructure systems in the planning, design, construction and operations of the seawater treatment replacement (Phase 1) and campus additions and associated site improvements (Phase 2) to better manage stormwater runoff, as well as bolster resiliency and adaptation to climate change impacts. Green infrastructure elements (e.g., permeable, porous or aggregate pavers) can be integrated into parking lot, roads, and walkway designs to increase permeability for snow melt and rainwater to infiltrate, and thereby reducing runoff and promoting groundwater recharge to replenish adjacent wetlands and streams. Rain gardens and/or vegetated bioswales installed in medians and along the parking lot perimeter are other options to slow stormwater runoff and promote infiltration, trap sediments and treat pollutants. EPA recommends that new impervious surfaces be constructed using permeable pavers.

To minimize the volume of storm water runoff, EPA recommends collecting, harvesting, and/or storing water from rainfall for future alternative water uses, such as toilet flush water, hydronic radiant heating systems, etc. The variety of systems include rain barrels, commercial building cisterns, and ground level pits. In addition, runoff from storm water and snow melt collected on rooftops can be reduced and/or minimized by routing drainage pipes into rain barrels and cisterns for storage, and/or into permeable areas, including rain gardens and/or vegetated swales to infiltrate and recharge the ground water aquifer. Green rooftops covered with natural growing media and local native vegetation would enable rainfall infiltration and evapotranspiration of stored water and be considered in the new research laboratory/office buildings

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<sup>23</sup> EPA Non-CO<sub>2</sub> Greenhouse Gas Emission Projections & Mitigation. Accessible at: <https://www.epa.gov/global-mitigation-non-co2-greenhouse-gases>. Accessed on 12/8/2022.

<sup>24</sup> DEA (Table 2.1-3); page 2-16.

<sup>25</sup> DEA (Table 2.1-4); page 2-19.

rooftop designs. For additional information and resources regarding green infrastructure designs, plans, and tools for this proposed project, please refer to EPA's Green Infrastructure website.<sup>26</sup>

### Sustainable Siting and Building Resilience

In 2020, CEQ released *Guiding Principles for Sustainable Federal Buildings*<sup>27</sup> consistent with fundamental sustainable design practices, such as EPA's green infrastructure, CEQ's six guiding principles focus on ensuring that Federal buildings: (1) employ integrated design principles; (2) optimize energy performance; (3) protect and conserve water; (4) enhance the indoor environment; (5) reduce the environmental impact of materials; and (6) assess and consider building resilience.

EPA recommends incorporating CEQ's Guiding Principles into the planning, design, construction and operations of the seawater treatment system replacement (Phase 1) and campus addition and associated site improvements (Phase 2). In particular, integrated design principle for sustainable siting to support building resilience refers to identifying and mitigating current and projected site specific long-term risks through considerations that provide resilience due to anthropogenic and natural events, such as sea level rise, tsunamis, flooding, storm events, geological hazards (e.g., seismically active fault zones, erosion and landslide areas), contaminated areas, etc. Consider siting and locating the proposed infrastructure, buildings, and facilities to avoid these "at risk" areas to bolstering resilience of the MRS to the impacts of climate change.

In particular, EPA recommends that the pipelines for the seawater treatment distribution system (Phase 1) and the proposed new Building A and Building 13 (Phase 2) be sited, located, planned, and designed to avoid areas of known contaminated soils and groundwater, and remnant buried asbestos-clad pipelines associated with former underground storage tanks within the former firefighting training area, and geological hazards.

EPA recommends the NEPA document discuss energy innovations and sustainability features for the planning, design, construction, and operation of the campus addition based on the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED).<sup>28</sup> Incorporating green infrastructure and CEQ's sustainable design practices into the planning, design, construction, and operations of the campus addition may result in LEED Silver, Gold, or Platinum certification. EPA recommends incorporating green infrastructure and sustainable design practices to support LEED certification.

### **Environmental Justice**

EPA recommends the NEPA document include an Environmental Justice analysis consistent with Executive Order 12898 on *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*.<sup>29</sup> E.O. 12898 directs federal agencies to identify and address the disproportionately high and adverse human health effects of federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. In addition, E.O. 13985 on *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*<sup>30</sup> be considered into the NEPA document because it includes a modern definition of equity that clarifies a broader approach.

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<sup>26</sup> EPA Green Infrastructure website. Accessible at: <https://www.epa.gov/green-infrastructure>. Accessed on 12/8/2022.

<sup>27</sup> CEQ *Guiding Principles for Sustainable Federal Buildings* (December 2020). CEQ-OFS-2020-1.

Accessible at: [https://www.sustainability.gov/pdfs/guiding\\_principles\\_for\\_sustainable\\_federal\\_buildings.pdf](https://www.sustainability.gov/pdfs/guiding_principles_for_sustainable_federal_buildings.pdf). Accessed on 12/8/2022.

<sup>28</sup> U.S. Green Building Council website. Accessible at: <https://www.usgbc.org/>. Accessed on 12/8/2022.

<sup>29</sup> E.O. 12898. *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. Accessible at: <https://www.federalregister.gov/documents/1995/02/09/95-3256/executive-order-co-12898-federal-actions-to-address-environmental-justice-in-minority-populations>. Accessed on 12/8/2022.

<sup>30</sup> E.O. 13985. *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government* Accessible at: <https://www.federalregister.gov/documents/2021/01/25/2021-01753/advancing-racial-equity-and-support-for-underserved-communities-through-the-federal-government>. Accessed on 12/8/2022.

To identify potential project level EJ concerns, EPA recommends applying two interactive web-based tools: the Environmental Justice Screening and Mapping Tool (EJScreen, Version 2.1)<sup>31</sup> and the Washington Environmental Health Disparities Mapping Tool (WEHD, Version 2.0).<sup>32</sup> EPA considers a project to be in an area of potential EJ concern when an EJScreen analysis for the project area shows one or more of the twelve EJ Indices at or above the 80th percentile in the nation and/or state. At a minimum, EPA recommends conducting a baseline EJ analysis to identify minority and low income populations in the project area using the EJScreen Tool. In addition, the WEHD can assist Federal agencies compare communities across the state for environmental health disparities. WEHD displays measures, such as poverty, health risks and diseases, and exposures to certain types and sources of pollution. EJScreen and WEHD are complementary tools.

EPA recommends consideration of all areas impacted by the proposed action. For example, areas of impact can include a single block group, tract, city, county or span across several block groups and communities. When assessing large geographic areas, consider the individual block groups within the project area in addition to an area-wide assessment. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. As the screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location and/or proposed project, consider additional information in an EJ analysis to supplement EJScreen outputs. Further review or outreach may be necessary to evaluate EJ concerns associated with the proposed action.

To support the success of the project EJ analysis, EPA recommends the NEPA document describes continued efforts to provide meaningful public outreach, engagement, and involvement with affected EJ communities regarding potential disproportionate and adverse environmental impacts associated with this proposed project. For example, construction activities would result in increased noise levels, traffic congestion, fugitive dust, exposure to contaminants, etc.

Additionally, EPA recommends evaluating and including Traditional Ecological Knowledge and Indigenous Traditional Ecological Knowledge<sup>33</sup> when describing potential Environmental Justice concerns in the NEPA analysis.

ITEK is a body of observations, oral and written knowledge, practices and beliefs that promote environmental sustainability and responsible stewardship of natural resources through relationships between humans and environmental systems. ITEK is owned by Indigenous people—including, but not limited to, Tribal Nations, Native Americans, Alaska Natives, and Native Hawaiians.

The proposed project area may directly and/or indirectly impact areas of subsistence and cultural use by local indigenous and other users. The evaluation and incorporation of ITEK in the NEPA analysis provide a mechanism for further identifying those potential impacts and ways in which to avoid and mitigate them.

Consistent with the Promising Practices for EJ Methodologies in NEPA Reviews,<sup>34</sup> EPA provides the following recommendations and considerations when developing mitigations for impacts to communities with EJ concerns:

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<sup>31</sup> EPA EJScreen Tool. Accessible at: <https://www.epa.gov/ejscreen>. Accessed on 12/8/2022.

<sup>32</sup> Washington Environmental Health Disparities Map Tool. Accessible at: <https://doh.wa.gov/data-and-statistical-reports/washington-tracking-network-wtn/washington-environmental-health-disparities-map>. Accessed on 12/8/2022.

<sup>33</sup> White House Memorandum: [Indigenous Traditional Ecological Knowledge and Federal Decision Making \(November 15, 2021\)](https://www.whitehouse.gov/wp-content/uploads/2021/11/111521-OSTP-CEQ-ITEK-Memo.pdf). Accessible at: <https://www.whitehouse.gov/wp-content/uploads/2021/11/111521-OSTP-CEQ-ITEK-Memo.pdf>. Accessed on 12/9/2022.

<sup>34</sup> Report of the Federal Interagency Working Group on EJ and NEPA Committee (March 2016). Promising Practices for EJ Methodologies in NEPA Reviews. Accessible at: [https://www.epa.gov/sites/default/files/2016-08/documents/nepa\\_promising\\_practices\\_document\\_2016.pdf](https://www.epa.gov/sites/default/files/2016-08/documents/nepa_promising_practices_document_2016.pdf). Accessed on 12/9/2022.

- The unique characteristics and conditions of minority populations and low-income populations in the affected environment may require adaptive and innovative mitigation measures to sufficiently address the specific circumstances and impacts presented by the proposed action. This includes mitigation of identified disproportionately high and adverse impacts, whenever feasible;
- Throughout the NEPA process, agencies may wish to (as appropriate) involve potentially affected minority populations and low-income populations as agencies develop and implement mitigation measures and monitoring. Establishing groups made up of community members can be an effective method of engaging minority and low-income populations as an agency develops mitigation measures;
- Agencies may wish to identify mitigation and monitoring measures designed specifically to address impacts to minority populations and low-income populations in the affected environment separately in the NEPA decision document and also separately in an environmental justice technical report; and
- If mitigation measures for impacts to minority populations and low-income populations in the affected environment have been identified in the NEPA document, agencies may wish to develop an adaptive management plan and conduct implementation and effectiveness monitoring. Monitoring implementation of mitigation measures can inform an agency and community whether the measures are on schedule and when they have been completed. Through the use of effectiveness monitoring, an agency and community can learn if the mitigation measures are providing the predicted outcomes. An adaptive management plan can provide agencies with a means for taking corrective action if mitigation implementation or effectiveness monitoring indicates the measures are not achieving the intended outcomes.

### **Tribal Consultation and Coordination**

EPA encourages NOAA to consult with the Puget Sound Tribes and incorporate feedback from the Tribes when making decisions regarding the project. EPA recommends the NEPA document describe the issues raised during the consultations and how those issues were addressed.